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The tropical American species of Dryopteris subgenus Eudryopteris

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While most of the species of *Dryopteris* occurring in the north temperate regions belong to the subgenus *Eudryopteris*, this subgenus is rather poorly represented in the tropics. The subgenus is in this paper delimited to include only the species belonging to the group of *D. filix mas*, and confined thus it is a most natural group, no doubt worthy of generic rank (*Dryopteris* proper), and not much related to the other groups of the genus. *Eudryopteris* as understood here is not to be confounded with the subgenus *Eudryopteris* of my Index Filicum. In a larger paper soon to be issued I shall give the characters of the different subgenera of *Dryopteris*, while here I intend to mention briefly some of the species of *Eudryopteris* from tropical America.

Till now I know only 10 species from the whole of tropical America, which all but one grow in Mexico. The rich fern localities, Jamaica and southern Brazil, have only two species each, the same two, *D. paleacea* and *D. patula*, and the South American Andes have, besides these, only one more, *D. Saffordii*, described below. The two species mentioned are widely distributed, from Mexico to Peru and from Jamaica to northern Argentina. In Mexico a considerable number of forms occur, which may all be referred to 9 species, although

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several more have been described. Especially the tri-quadripinnatifid *D. patula* varies exceedingly here, and it is very difficult by studying dried material alone to arrive at a definite conclusion in regard to the specific value of the often very different forms. The following can, I believe, be considered good species:

1. **Dryopteris Saffordii** sp. nov.

Rhizome unknown. Stipes short, 7–8 cm. long, stramineous, sparsely clothed with ovate, thin, pale yellowish scales. Lamina lanceolate, 30 cm. long, 10 cm. broad at the middle, the base attenuate, papyraceous or coriaceous, pale green below, bipinnatifid. Rachis stramineous, sulcate above, minutely glandular and sparsely paleaceous. Pinnae opposite, attenuated towards the acute point from a broader, sessile base, the middle ones 5 cm. long, 1–1.5 cm. broad, the lower gradually reduced, remote, the lowermost about 2 cm. long, all minutely glandular throughout and incised to a wing 1 mm. broad. Lobes oblique, triangular, acute, faintly serrate, the upper basal one longer and broader, subpinnatifid. Veins immersed, indistinct, often furcate, 3–4-jugate. Sori medial, rather large, clothed with reniform, reddish, minutely glandular, persistent indusia.

Type from Peru, mountains back of Lima, Arroyo Railway, collected by William E. Safford, March 1892, *no. 994* (U. S. National Herbarium).

A near relative of *D. filix mas*, differing by the less cut lamina, which is nearly coriaceous in texture and densely viscid throughout with minute, glossy glands.

2. D. FILIX MAS (L.) Schott, Gen. Fil. *pl. 9.* 1834.

Extends southward only to southern Mexico, wherefrom I have seen some few specimens.

3. **Dryopteris paleacea** (Sw.) comb. nov.

Aspidium paleaceum Sw. Syn. Fil. 52. 1806.

Aspidium parallelogrammum Kze. Linnæa **13:** 146. 1839.

This is commonly referred as a variety to *D. filix mas*, but I see no reason for not separating it as a valid species. It is widely distributed in tropical America, and is a very uniform species. The type came from Peru. I have specimens from San Domingo (*Eggers 2306*); Jamaica; Blue Mountain Peak, Mexico, common; Guatemala; Costa Rica; Columbia; Peru; Bolivia; Argentina; South Brazil.

4. D. FOURNIERI (Bak.) C. Chr. Ind. 266. 1905.

Mexico. I am inclined to believe that this small species is the same as *Nephrodium mexicanum* Presl, and it is perhaps not specifically distinct from the following.

5. D. GLANDULIFERA (Liebm.) C. Chr. Ind. 267. 1905.

Mexico. A rather doubtful species.

6. **Dryopteris cinnamomea** (Cav.) comb. nov.

Tectaria cinnamomea Cav. Descr. Pl. 252. 1802.

Aspidium athyrioides Mart. et Gal. Mém. Ac. Brux. **15:** 67. *pl. 18.* 1842.

Dryopteris athyrioides O. Ktze. [See C. Chr. Ind. 253, where the full synonymy is given.]

Aspidium agatolepis Fée, 8 Mém. 106. 1857.

A fragment in Herb. Swartz, Stockholm, of the type specimen from Mexico, Chalma, leg. Luis Née, shows that *D. athyrioides* (Mart. et Gal.) O. Ktze. must bear the older name of Cavanilles. It is a variable species, known from Mexico only.

7. D. INDECORA (Liebm.) C. Chr. Ind. 272. 1905.

Mexico. A very doubtful species, founded on three imperfect leaves.

8. D. PATULA (Sw.) Und. [See C. Chr. Ind. 283. 1905, for synonymy.]

Type from Brazil, where the species varies only a little. A slightly different form was collected in Jamaica by

Hart, and I dare not separate out as species the numerous Andine forms, which are found from Arizona to Ecuador. I can distinguish two or three varieties, which I prefer to describe in another paper. *Nephrodium mexicanum* Presl is commonly supposed to belong here; as mentioned above, I believe it is identical with *D. Fournieri.*

9. **Dryopteris Maxoni** Und. & C. Chr. sp. nov.

Rhizome oblique, thick, sparsely paleaceous. Stipes thick, stramineous, terete, 3–4 dm. long, sparsely clothed with entire, ovate, pale or black-brown scales. Lamina deltoid, deltoid-ovate or ovate-lanceolate, 4-6 dm. long, papyraceous or almost coriaceous, pale green, quite destitute of hairs, but furnished with scattered pale small scales on the rachis and on the costae below, bipinnate-tripinnatifid. Pinnae subopposite, the basal pair subovate, scarcely shortened, the middle ones tapering from the base to the acute apex, all short-petiolate, equilateral, the largest up to 15 cm. long. Pinnulae remote, equilateral, the lower ones free with the base contracted, the middle decurrent, the upper confluent, pinnatifidly cut almost to the costula. Lobes oblong, entire or often dentate at the truncate apex. Veins furcate. Sori 1 or 2 to a lobe, covered with large, reniform, hemispherical, coriaceous indusia, which are minutely glandular and perfectly conceal the sporangia.

Specimens of this species were distributed some years ago under the name *D. Maxoni* Und. n. sp., by C. G. Pringle, *no. 8846*, but the species has been undescribed until now. Specimens of this were included in several lots forwarded to me at different times by Mr. Wm. R. Maxon, and it is a pleasure to me to publish the description in this JOURNAL and to follow Underwood in dedicating it to my American friend in Washington, to whom I am indebted for numerous courtesies.

D. Maxoni seems to be a common species in southwest Mexico, in the states of Morelos, Michoacan, and Jalisco. Recently I have received numerous specimens from Prince

Roland Bonaparte, collected near Morelia, Michoacan, by F. Arsène. The type specimen is from Morelos, canyons above Cuernavaca, 5,500 ft., *Pringle 6190* (U. S. National Herbarium), which specimen belongs to a more fully developed form than *Pringle 8846*, to which the name was originally applied. I have seen several other specimens in various herbaria.

D. Maxoni is a very distinct species, perhaps most closely related to the Californian *D. rigida arguta* Und. It is especially well marked by its large indusia, but the thick, straw-colored, somewhat fleshy stipe and rachis are also very characteristic. From *D. patula* it can be distinguished at once by the equilateral pinnae and pinnules and the broad segments. In the indusial character it resembles the next species, which, however, is quite different in habit and pubescence.

10. D. KARWINSKYANA (Mett.) O. Ktze. [For synonymy see C. Chr. Ind. 292. 1905.]

A remarkable, finely cut species. The whole leaf is densely clothed with unicellular, cylindrical, short hairs. The indusium is large and conceals perfectly the sporangia. Known from Mexico, Guatemala, and Nicaragua.

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